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~~TRANSMISSION SYSTEM~~

~~Methodology of the Invention~~

~~A methodology/system for the electronic sales, distribution, storage, manipulation, retrieval, playback, and copyright protection of Digital Audio Music.~~

~~[B] Cross-References to related applications~~

~~None~~

~~[C] Brief summary of the Invention~~

~~This invention relates in general to a new and improved methodology/system for the electronic sales, distribution, storage, manipulation, retrieval, playback, and copyright protection of Digital Audio Music.~~

The three basic mediums (hardware units) of music: records, tapes, and compact discs, greatly restricts the transferability of music and results in a variety of inefficiencies.

CAPACITY: The individual hardware units as cited above are limited as to the amount of music that can be stored on each.

MATERIALS: The materials used to manufacture the hardware units are subject to damage and deterioration during normal operations, handling, and exposure to the elements.

SIZE: The physical size of the hardware units imposes constraints on the quantity of hardware units which can be housed for playback in confined areas such as in automobiles, boats, planes, etc.

RETRIEVAL: Hardware units limit the ability to play, in a sequence selected by the user, songs from different albums. For example, if the user wants to play one song from ten different albums, the user would spend an inordinant amount of time handling, sorting, and cueing the ten different hardware units.

SALES and DISTRIBUTION: Prior to final purchase, hardware units need to be physically transfered from the manufacturing facility to the wholesale warehouse to the retail warehouse to the retail outlet, resulting in lengthly lag time between music creation and music marketing, as well as incurring unnessary and inefficient transfer and handling costs. Additionally, tooling costs required for mass production of the hardware units and the material cost of the hardware units themselves, further drives up the cost of music to the end user.

QUALITY: Until the recent invention of Digital Audio Music, as used on Compact Discs, distortion free transfer from the hardware units to the stereo system was virtually impossible. Digital Audio Music is simply music converted into a very basic computer language known as binary. A series of commands known as zeros or ones encode the music for future playback. Use of laser retrieval of the binary commands results in distortion free transfer of the music from the compact disc to the stereo system. Quality Digital Audio Music is defined as the binary structure of the Digital Audio Music. Conventional analog tape recording of Digital Audio Music is not to be considered quality inasmuch as the binary structure itself is not recorded. While Digital Audio Music on compact discs is a technological breakthrough in audio quality, the method by which the music is sold, distributed, stored, manipulated, retrieved, played, and protected from copyright infringements remains as inefficient as with records and tapes.

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COPYRIGHT PROTECTION: Since the invention of tape recording devices, strict control and enforcement of copyright laws have proved difficult and impossible with home recorders. Additionally, the recent invention of Digital Audio Tape Recorders now jeopardizes the electronic copyright protection of quality Digital Audio Music on Compact Discs or Digital Audio Tapes. If music exists on hardware units, it can be copied.

Accordingly, it is an objective of this invention is to provide a new and improved ^{method}~~methodology~~/system to electronically sell and distribute Digital Audio Music.

A further objective of this invention to provide a new and improved ^{method}~~methodology~~/system to electronically store and retrieve Digital Audio Music.

Another objective of this invention is to provide a new and improved ^{method}~~methodology~~/system to electronically manipulate, i.e., sort, cue, and select, Digital Audio Music for playback.

Still another objective of this invention is to offer a new and improved ^{method}~~methodology~~/system which can prevent unauthorized electronic copying of quality Digital Audio Music.

Briefly, this invention accomplishes the above cited objectives by providing a new and improved ^{method}~~methodology~~/system of electronic sales, distribution, storage, manipulation, retrieval, playback, and copyright protection of Digital Audio Music. The high speed transfer of Digital Audio Music as prescribed by this invention is stored onto one piece of hardware, a hard disk, thus eliminating the need to unnecessarily handle records, tapes, or compact discs on a regular basis. This invention recalls stored music for playback as selected/programmed by the user. This invention can easily and electronically sort stored music based on many different criteria such as, but not limited to, music category, artist, album, user's favorite songs, etc. An additional feature of this invention is the random playback of songs, also based on the user's selection. For example, the user could have this invention randomly play all jazz songs stored on the user's hard disk, or randomly play all songs by a certain artist, or randomly play all of the user's favorite songs which the user previously electronically "tagged" as favorites. Further, being more specific, the user can electronically select a series of individual songs from different albums for sequential playback.

This invention can be configured to either accept direct input of Digital Audio Music from the digital output of a Compact Disc, such transfer would be performed by the private user, or this invention can be configured to accept Digital Audio Music from a source authorized by the copyright holder to sell and distribute the copyrighted materials, thus guaranteeing the protection of such copyrighted materials. Either method of electronically transferring Digital Audio Music by means of this invention is intended to comply with all copyright laws and restrictions and any such transfer is subject to the appropriate authorization by the copyright holder. Inasmuch as Digital Audio Music is software and this invention electronically transfers and stores such music, electronic sales and distribution of the music can take place via telephone lines onto a hard disk. This new ^{method}~~methodology~~/system of music sales and distribution will greatly reduce the cost of goods sold and will reduce the lag time between music creation and music marketing from weeks down to hours.

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Further objectives and advantages of this invention will become apparent as the following description proceeds and the particular features of novelty which characterize this invention will be pointed out in the claims annexed to and forming a part of this declaration.

[D] Brief description of the several views of the drawings

For a better understanding of this invention, reference should be made to the following detailed description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a pictorial flow chart which may be used in carrying out the teachings of this invention for the purposes of electronic sales, distribution, storage, manipulation, retrieval, playback, and copyright protection of Digital Audio Music; and

Fig. 2 is a pictorial flow chart which may be used in carrying out the teachings of this invention for the purposes of electronic storage, manipulation, retrieval, and playback of Digital Audio Music.

Referring now to Fig. 1, this invention is comprised of the following:

- 10 Hard Disk of the copyright holder
- 20 Control Unit of the copyright holder
 - 20a Control Panel
 - 20b Control Integrated Circuit
 - 20c Sales Random Access Memory Chip
- 30 Telephone Lines/Input Transfer
- 50 Control Unit of the user
 - 50a Control Panel
 - 50b Control Integrated Circuit
 - 50c Incoming Random Access Memory Chip
 - 50d Play Back Random Access Memory Chip
- 60 Hard Disk of the user
- 70 Video Display Unit
- 80 Stereo Speakers

The Hard Disk 10 of the agent authorized to electronically sell and distribute the copyrighted Digital Audio Music is the originating source of music in the configuration as outlined in Fig. 1. The Control Unit 20 of the authorized agent is the means by which the electronic transfer of the Digital Audio Music from the agent's Hard Disk 10 via the Telephone Lines 30 to the user's Control Unit 50 is possible. The user's Control Unit would be comprised of a Control Panel 50a, a Control Integrated Circuit 50b, an Incoming Random Access Memory Chip 50c, and a Play Back Random Access Memory Chip 50d. Similarly, the authorized agent's Control Unit 20 would have a control panel and control integrated circuit similar to that of the user's Control Unit 50. The authorized agent's Control Unit 20, however, would only require the Sales Random Access Memory Chip 20c. The other components in Fig. 1 include a Hard Disk 60, a Video Display Unit 70, and a set of Stereo Speakers 80.

Referring now to Fig. 2, with the exception of a substitution of a Compact Disc Player 40 (as the initial source of Digital Audio Music) for the agent's Hard Disk 10, the agent's Control Unit 20, and the Telephone Lines 30 in Fig. 1, Fig. 2 is the same as Fig. 1.

In Fig. 1 and Fig. 2 the following components are already commercially available: the agent's Hard Disk 10, the Telephone Lines 30, the Compact Disc Player 40, the user's Hard Disk 60, the Video Display Unit 70, and the Stereo Speakers 80. The Control Units 20 and 50, however, would be designed specifically to meet the teachings of this invention. The design of the control units would incorporate the following functional features:

- 1) the Control Panels 20a and 50a would be designed to permit the agent and user to program the respective Control Integrated Circuits 20b and 50b,
- 2) the Control Integrated Circuits 20b and 50b would be designed to control and execute the respective commands of the agent and user and regulate the electronic transfer of Digital Audio Music throughout the system, additionally, the sales Control Integrated Circuit 20b could electronically code the Digital Audio Music in a configuration which would prevent unauthorized reproductions of the copyrighted material,
- 3) the Sales Random Access Memory Chip 20c would be designed to temporarily store user purchased Digital Audio Music for subsequent electronic transfer via telephone lines to the user's Control Unit 50,
- 4) the Incoming Random Access Memory Chip 50c would be designed to temporarily store Digital Audio Music for subsequent electronic storage to the user's Hard Disk 60,
- 5) the Play Back Random Access Memory Chip 50d would be designed to temporarily store Digital Audio Music for sequential playback.

The foregoing description of the Control Units 20 and 50 is intended as an example only and thereby is not restrictive with respect to the exact number of components and/or its actual design.

~~[E] Detailed description~~

Once the Digital Audio Music has been electronically stored onto the user's Hard Disk 60, having the potential to store literally thousands of songs, the user is free to perform the many functions of this invention. To play a stored song, the user types in the appropriate commands on the Control Panel 50a, and those commands are relayed to the Control Integrated Circuit 50b which retrieves the selected song from the Hard Disk 60. When a song is retrieved from the Hard Disk 60 only a replica of the permanently stored song is retrieved. The permanently stored song remains intact on the Hard Disk 60, thus allowing repeated playback. The Control Integrated Circuit 50b stores the replica onto the Play Back Random Access Memory Chip 50d at a high transfer rate. The Control Integrated Circuit 50b then sends the electronic output to the Stereo Speakers 80 at a controlled rate using the Play Back Random Access Memory Chip 50d as a temporary staging point for the Digital Audio Music.

Unique to this invention is that the Control Unit 50 also serves as the user's personal disk jockey. The user may request specific songs to be electronically cued for playback, or may request the Control Unit 50 to randomly select songs based on the user's criteria. All of these commands are electronically stored in random access memory enabling the control unit to remember prior commands while simultaneously performing other tasks requested by the user and, at the same time, continuing to play songs previously cued.

Offering a convenient visual display of the user's library of songs is but one more new and improved aspect of this invention. As the Control Unit 50 is executing the user's commands to electronically sort, select, randomly play, etc., the Video Display Screen 70 is continually providing feedback to the user. The Video Display Screen 70 can list/scroll all songs stored on the Hard Disk 60, list/scroll all cued songs, display the current command function selected by the user, etc. Further expanding upon the improvements this invention has to offer, the Video Display Screen 70 can display the lyrics of the song being played, as well as the name of the song, album, artist, recording company, date of recording, duration of song, etc. This is possible if the lyrics and other incidental information are electronically stored to the Hard Disk 60 with the Digital Audio Music.

In summary, there has been disclosed a new and improved ^{method} ~~methodology~~/system by which Digital Audio Music can be electronically sold, distributed, transferred, and stored. Further, there has been disclosed a new and improved ^{method} ~~methodology~~/system by which Digital Audio Music can be electronically manipulated, i.e., sorted, cued, and selected for playback. Further still, there has been disclosed a new and improved ~~methodology~~/system by which the electronic manipulation of Digital Audio Music can be visually displayed for the convenience of the user. Additionally, there has been disclosed a new and improved ~~methodology~~/system by which electronic copyright protection of quality Digital Audio Music is possible through use of this invention.

~~{F}~~ Claims

Since numerous changes may be made in the above described process and apparatus and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative, and not in a limiting sense. Further, it is intended that this invention is not to be limited to Digital Audio Music and can include Digital Video, Digital Commercials, and other applications of digital information.

Claims